

# Barrio Logan A Case Study



**Answering Questions  
of Exposure**

**Linda C. Murchison  
June 26, 2002**



**California Environmental Protection Agency**  
**Air Resources Board**



Barrio Logan

Logan Memorial

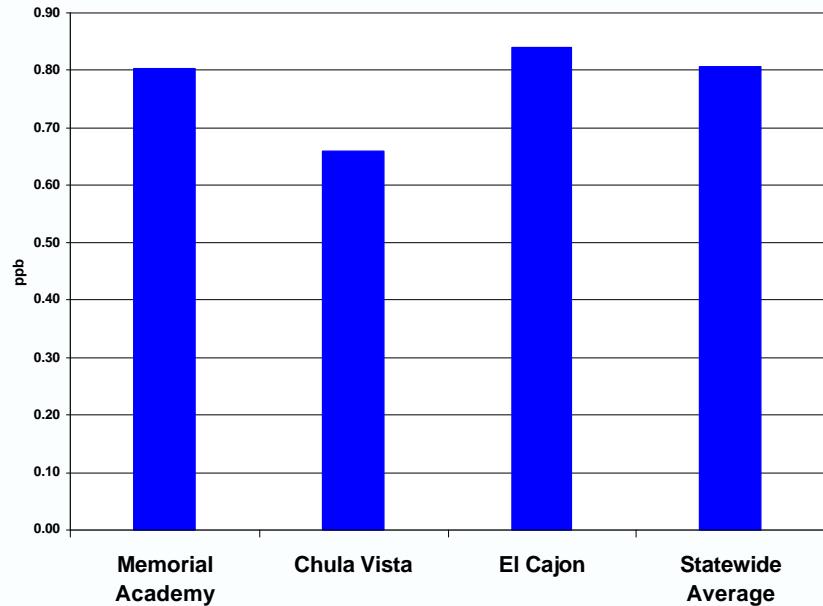
# Air Monitoring in Barrio Logan

- † Invited into the community in 1999
- † Worked closely with community, air district and other stakeholders
- † ARB's Monitoring and Laboratory Division
  - set up monitors at Memorial Academy
  - monitored for 17 months

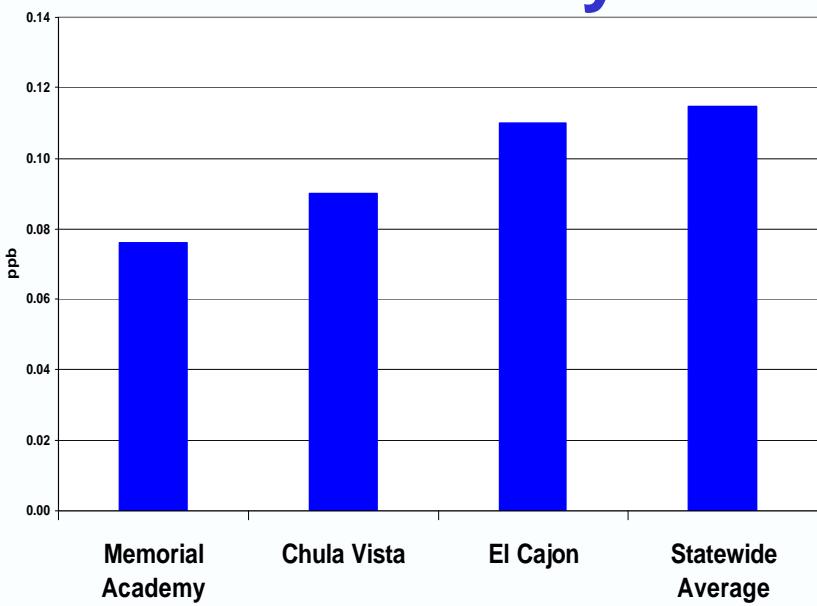


# Annual Average Levels

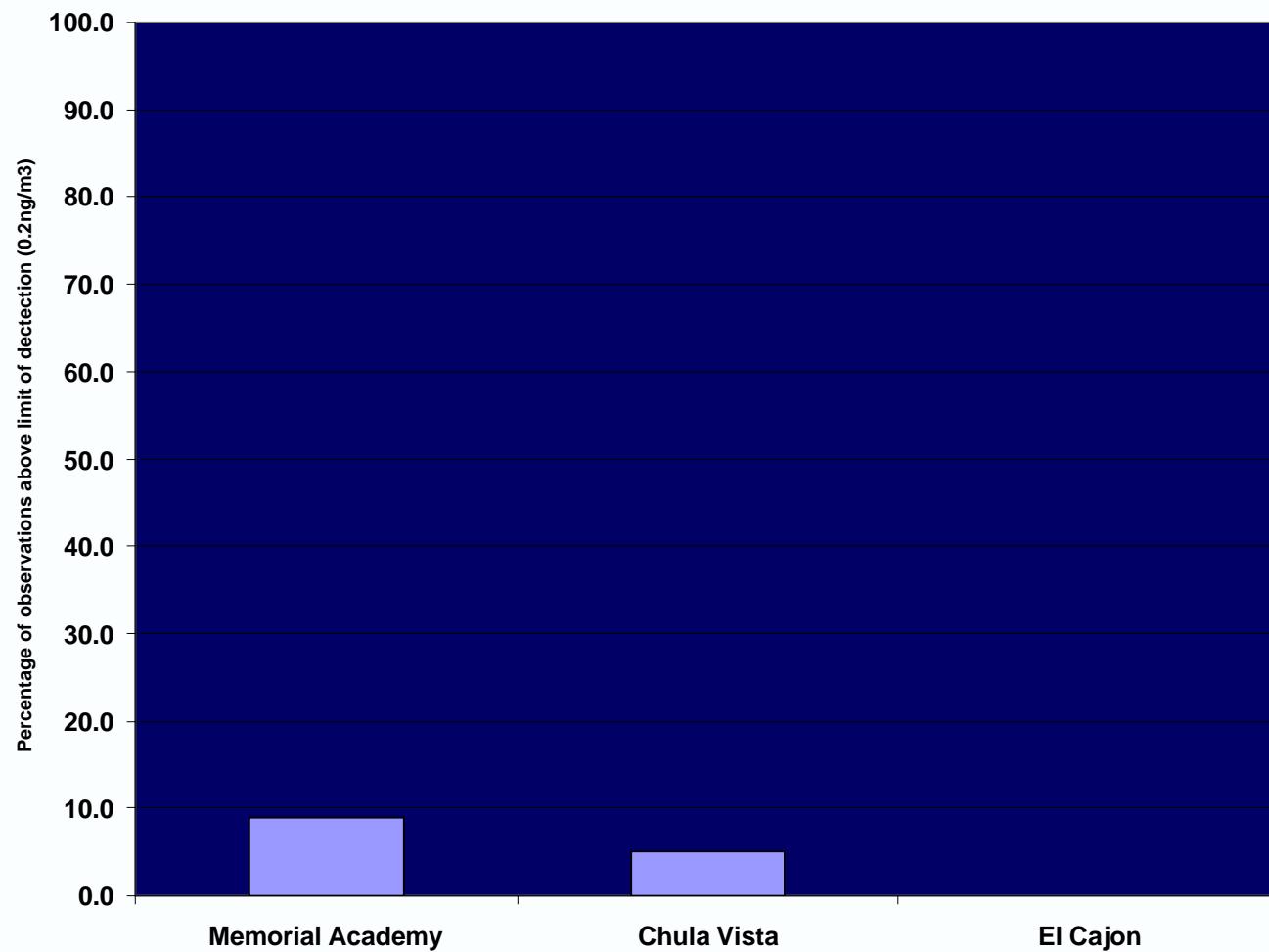
## Benzene



## Perchloroethylene



# Percentage of Observations Above Limit of Detection for Hexavalent Chromium

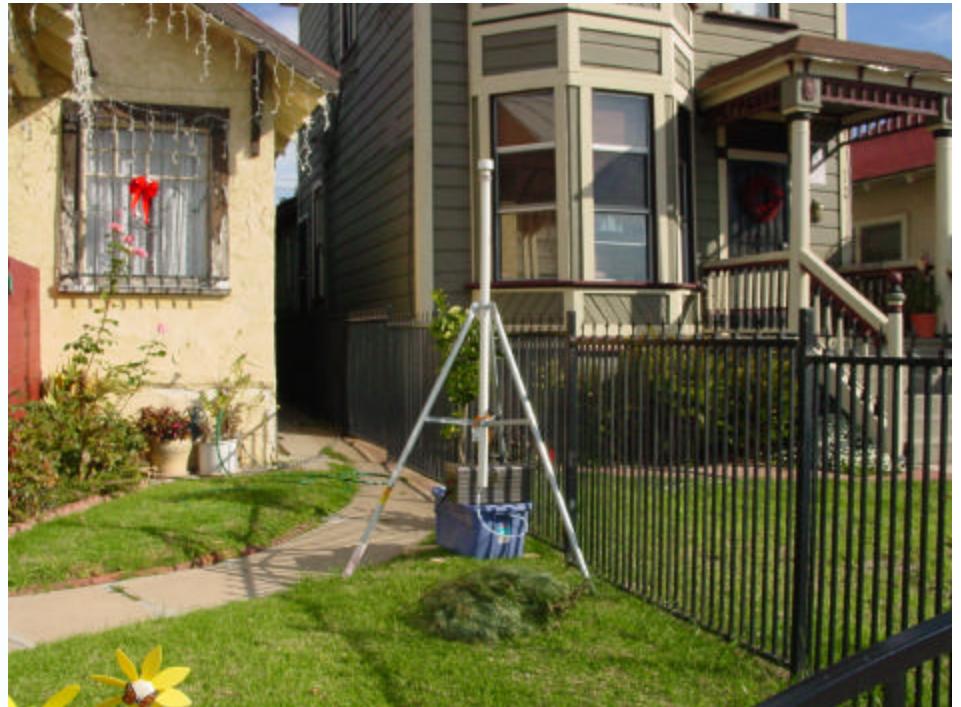


# Memorial Academy Results

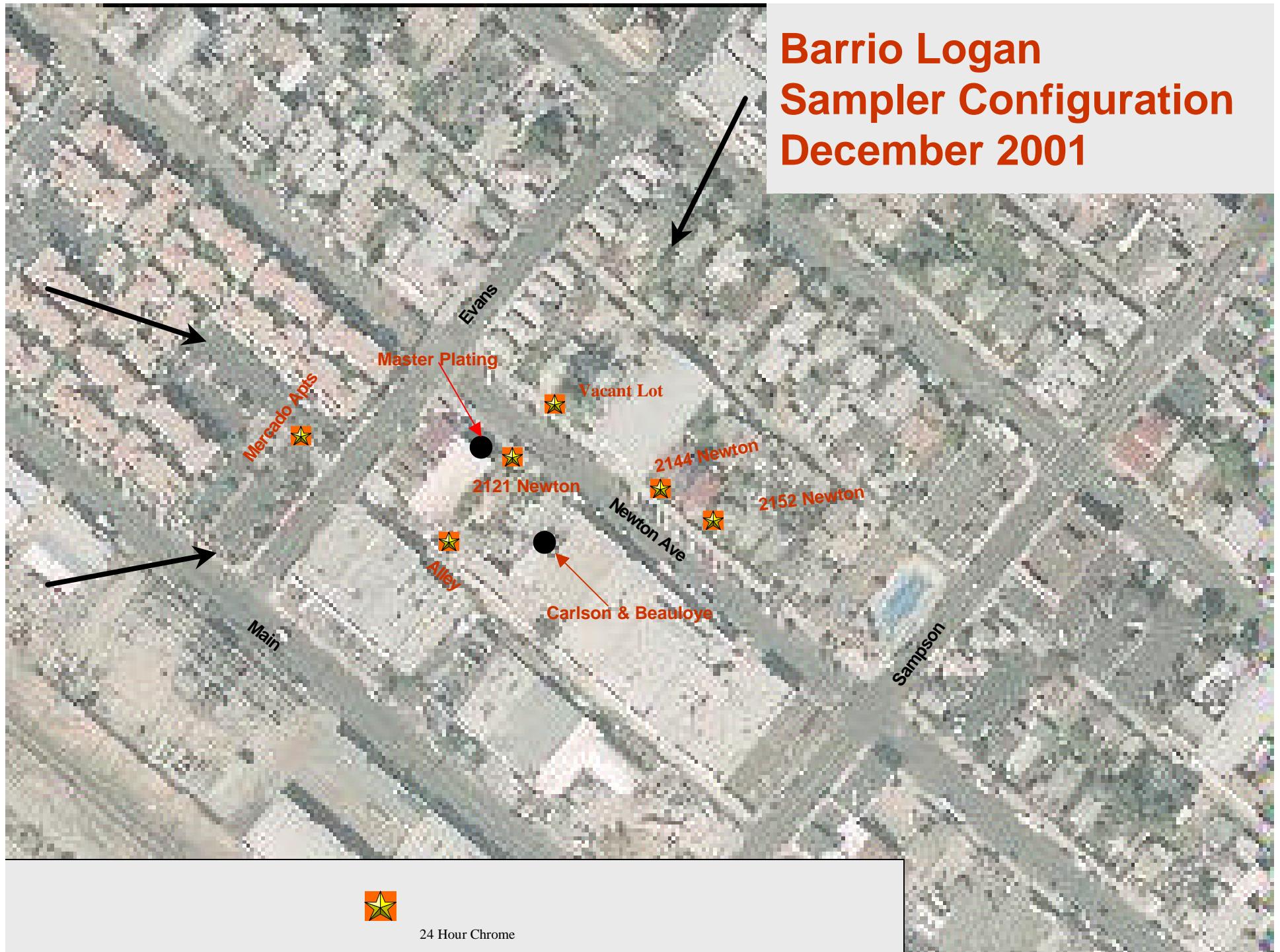
- † Air quality results seen at Memorial Academy are similar to the San Diego region and the statewide average
- † Potential cancer risk values measured at Memorial Academy are similar to values found in El Cajon and to the statewide average values

# Hexavalent Chrome Exposure Monitoring December 2001

- † Objective - to understand neighborhood exposure
- † Two weeks - December, 2001
- † Six sites near two chrome platers
- † 24 hour samples collected daily
- † High hexavalent chrome levels
- † Sources unclear



# Barrio Logan Sampler Configuration December 2001













**MERCADO**  
APARTMENTS

**Parking by Permit  
Only**

**NO VISITOR PARKING**

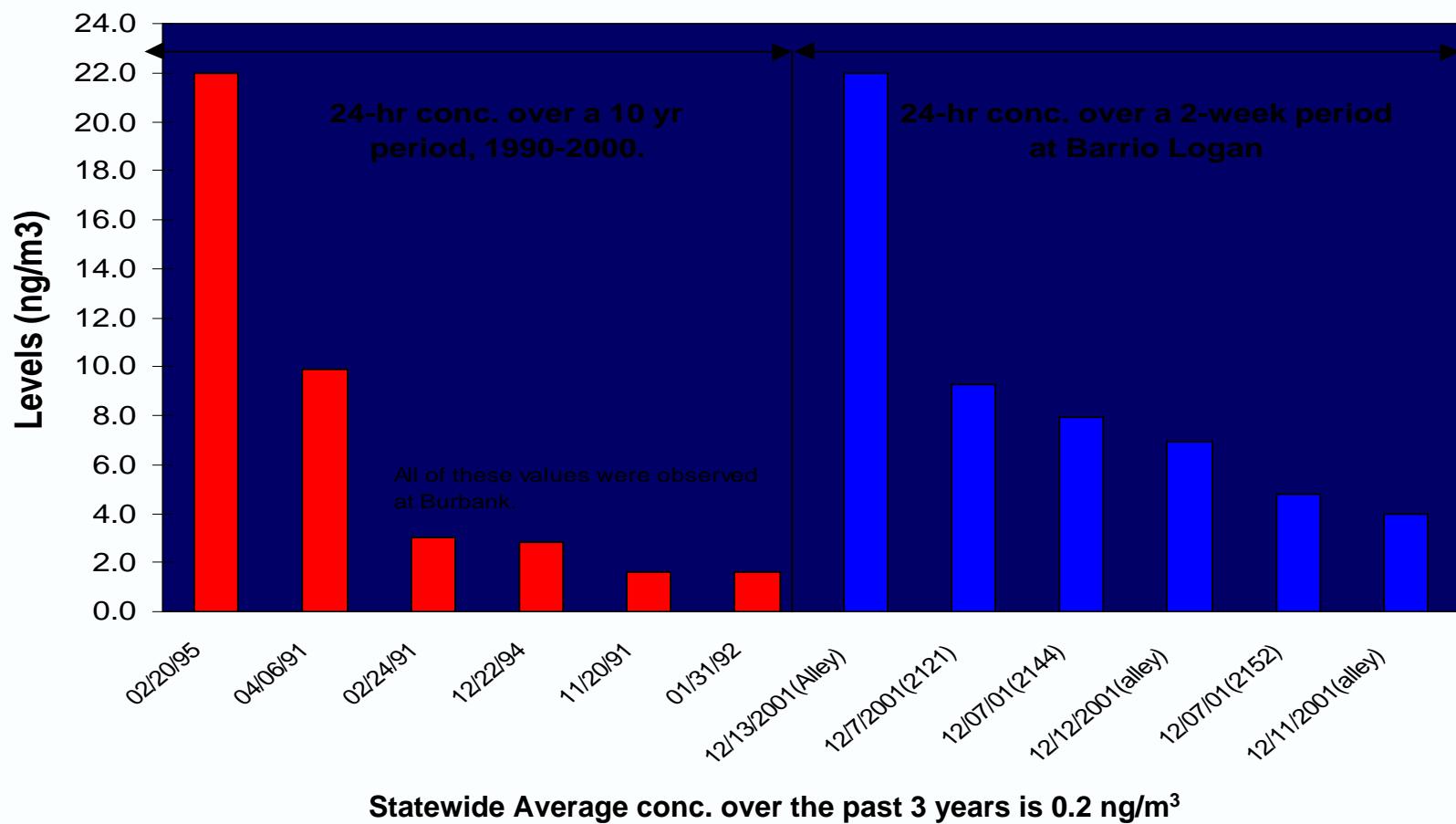
**UNAUTHORIZED VEHICLES  
WILL BE TOWED AWAY AT  
VEHICLE OWNERS EXPENSE.**

**Western Towing (809) 297-8807  
CIVL: 226588A SDPD 531 2844**

# Summary of Ambient Air Monitoring Results - Dec

Sampling Location	December 3-17, 2001	
	Hexavalent Chromium (ng/m <sup>3</sup> )	Average
Location 1 (between plating facilities)	1.44	9.3
Location 2 (vacant lot)	0.37	3.6
Location 2c (duplicate at vacant lot)	0.38	3.2
Location 3 (across street)	0.84	7.9
Location 4 (across street)	0.62	4.8
Location 5 (alley)	2.78	22
Location 6 (Mercado Apt parking lot)	0.24	1
Average of all samples	0.98	
Average cancer risk for all locations	147	

# Hexavalent Chromium Comparison of ARB Statewide Network vs. Barrio Logan



# Monitoring Objectives

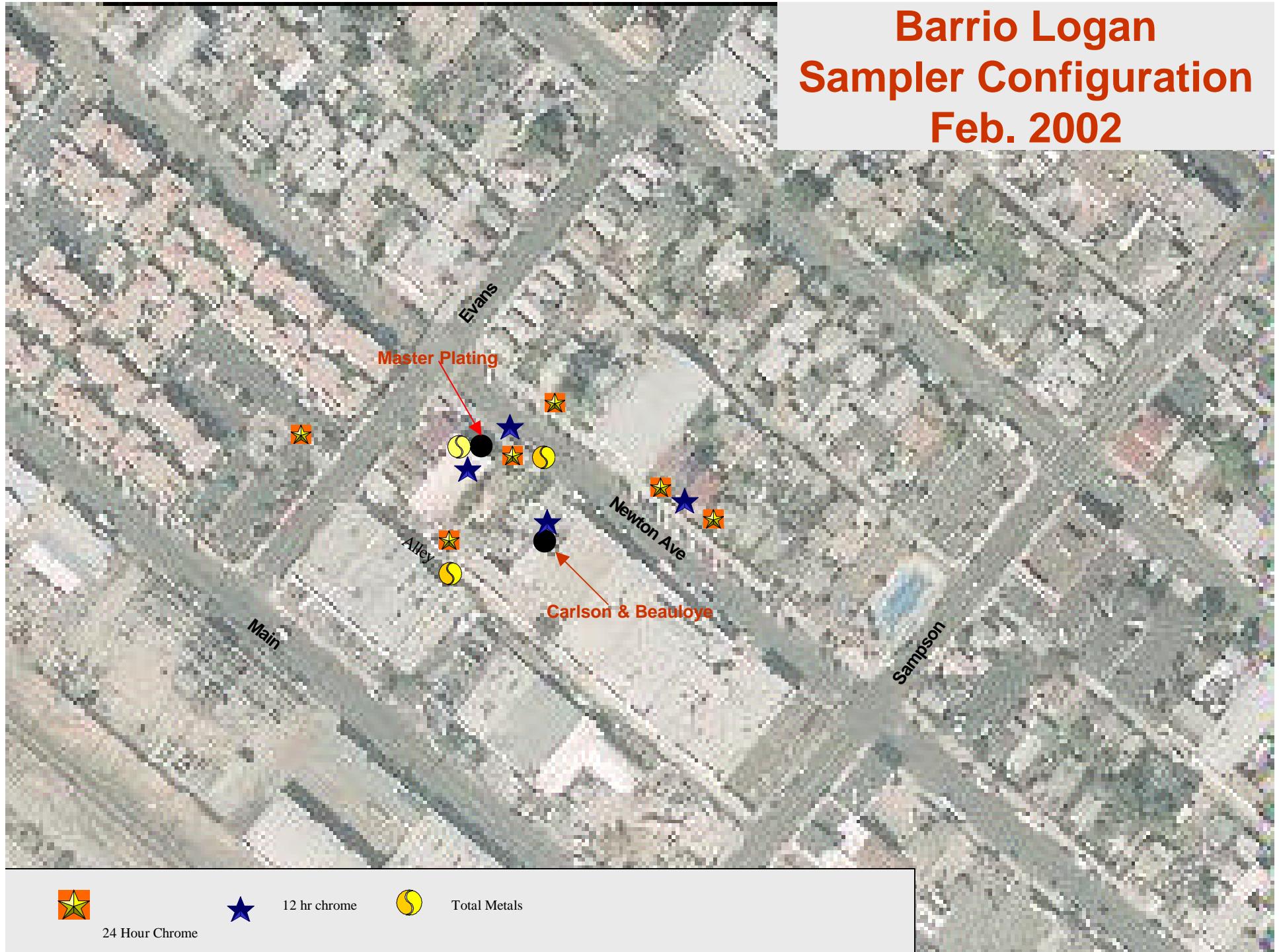
- † Exposure
  - To understand neighborhood exposure
- † Diagnostic
  - Will high levels of hexavalent chromium seen in December continue?
  - What is source(s) of problem?

# Monitoring Configuration II

## February 5-March 8

- † Exposure Monitoring
  - Same six sites still monitoring 24 hr Cr<sup>+6</sup>
- † Diagnostic
  - 2121 Newton is now also monitoring
    - 12 hr Cr<sup>+6</sup>
    - 24 hr metals
  - 2152 Newton is now also monitoring
    - 12 hr chrome
  - Inside monitoring is being conducted at C&B and MP for Cr<sup>+6</sup> and metals (Weekdays Only)

# Barrio Logan Sampler Configuration Feb. 2002







# Chrome Monitoring Data

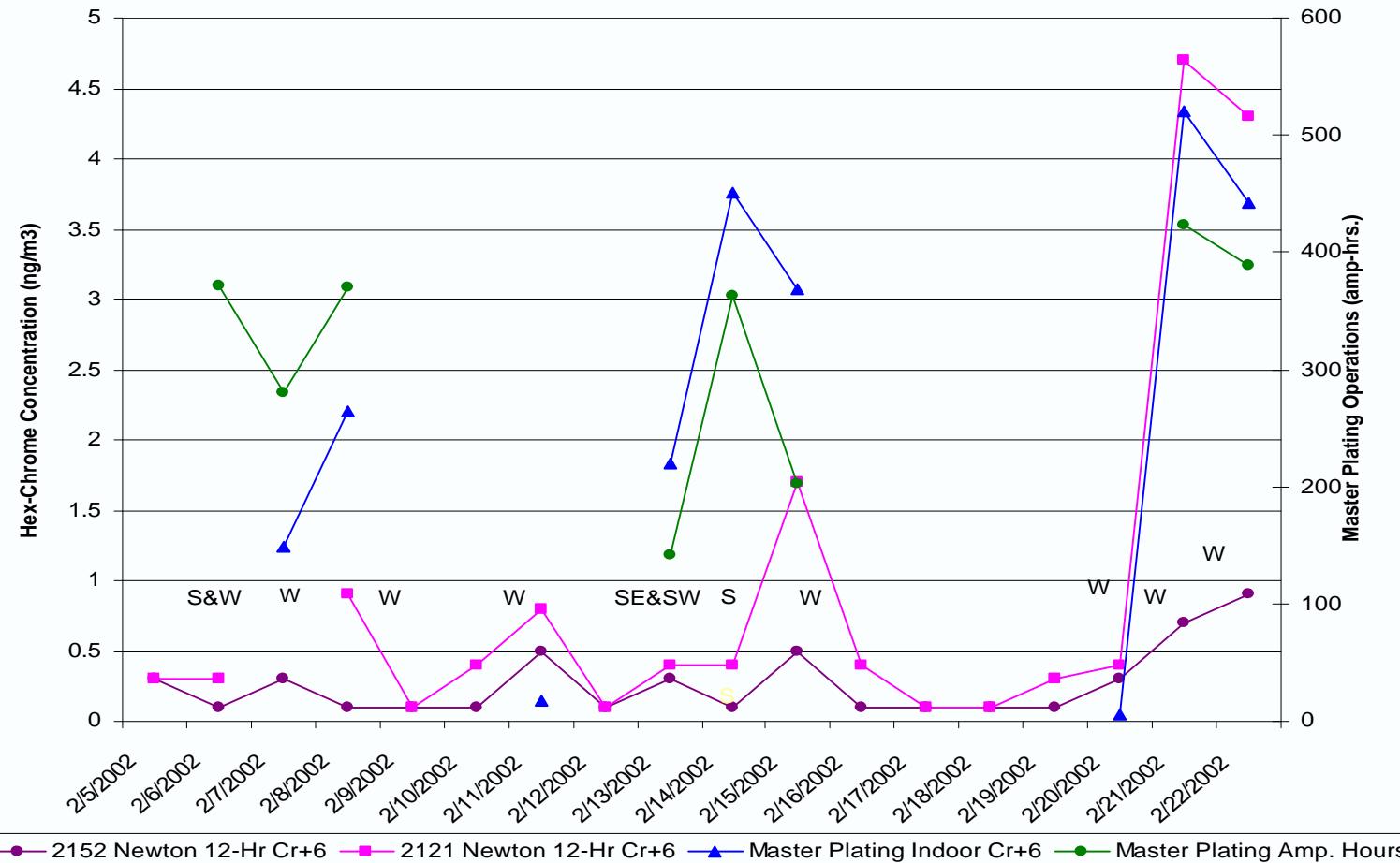
DATE	2144 NEWTON	2152 NEWTON	2152 NEWTON- 12 HOUR	ALLEY	VACANT LOT	VACANT LOT- COLLOCAT	MERCADO APTS	2121 NEWTON	2121 NEWTON- 12 HOUR	MASTER PLATING (8 hr)	2141 NEWTON (8 hr)
2/5/2002	<.2	<.2	<.4	0.3	0.3	0.3	no sample	<.2	<.4	no sample	no sample
2/6/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	0	.3*	no sample	no sample
2/7/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	<b>0.4</b>	no sample	<b>149</b>	no sample
2/8/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	<b>0.8</b>	<b>0.9</b>	<b>265</b>	no sample
2/9/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	<.2	<.4	no sample	no sample
2/10/2002	0.3	0.4	<.4	0.8	0.2	<.2	<.2	1.4	0.4	no sample	no sample
2/11/2002	<.2	0.4	0.5	0.2	0.3	0.3	0.2	<b>0.6</b>	<b>0.8</b>	<b>17</b>	<b>30</b>
2/12/2002	<.2	<.2	<.4	0.2	<.2	<.2	<.2	<b>0.2</b>	<.4	<b>3.9</b>	<b>27</b>
2/13/2002	<.2	<.2	<.4	<.2	<.2	<.2	no sample	<b>&lt;.2</b>	<b>0.4</b>	<b>220</b>	no sample
2/14/2002	<.2	<.2	<.4	<.2	0.3	<.2	<.2	<b>&lt;.2</b>	<b>0.4</b>	<b>451</b>	no sample
2/15/2002	<.2	<.2	0.5	<.2	<.2	<.2	<.2	<b>0.5</b>	<b>1.7</b>	<b>368</b>	no sample
2/16/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	<.2	0.4	no sample	no sample
2/17/2002	<.2	<.2	<.4	0.2	<.2	<.2	<.2	<.2	<.4	no sample	no sample
2/18/2002	<.2	<.2	<.4	0.2	<.2	<.2	<.2	0.2	<.4	no sample	no sample
2/19/2002	<.2	<.2	<.4	<.2	<.2	<.2	<.2	<b>0.2</b>	<.4	<b>5.9</b>	<b>12</b>
2/20/2002	<.2	<.2	<.4	<.2	<.2	<.2	0.2	<b>0.3</b>	<b>0.4</b>	<b>6</b>	<b>18</b>
2/21/2002	0.6	0.3	0.7	0.4	0.4	0.4	0.4	<b>3.6</b>	<b>4.7</b>	<b>521</b>	no sample
2/22/2002	0.3	0.3	0.9	<.2	0.2	<.2	0.2	<b>1.7</b>	<b>4.3</b>	<b>442</b>	no sample

\*Designated as a 12 Hour sample but ran 24 Hours

LOD 24 Hr - 0.2ng/m<sup>3</sup> LOD 12 Hour - 0.4 ng/m<sup>3</sup> LOD 8 hours  
- 0.6 ng/m<sup>3</sup>

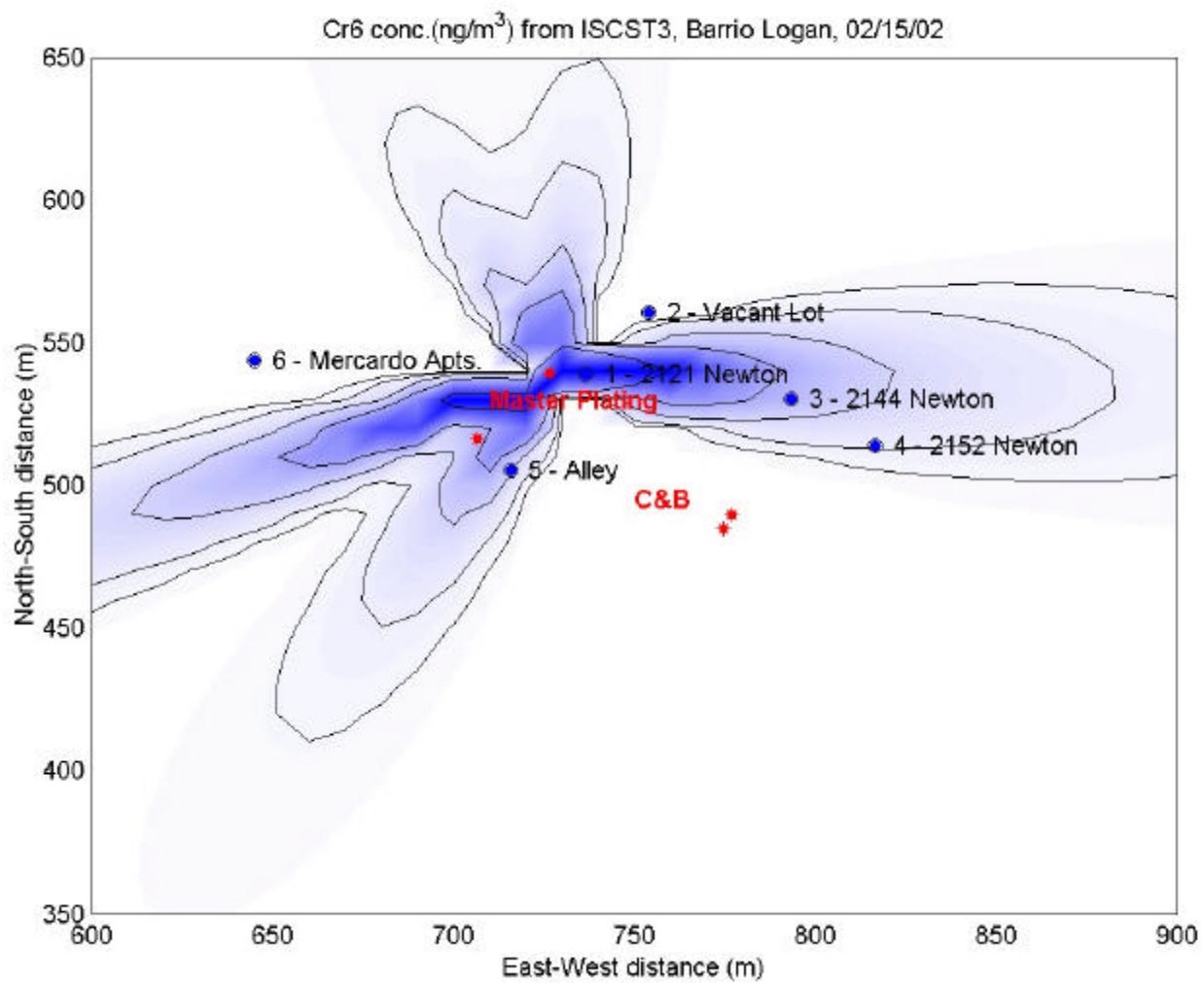


# Master Plating Indoor Results v. Ambient 12-Hr. Hexavalent Chromium (including daytime wind direction)



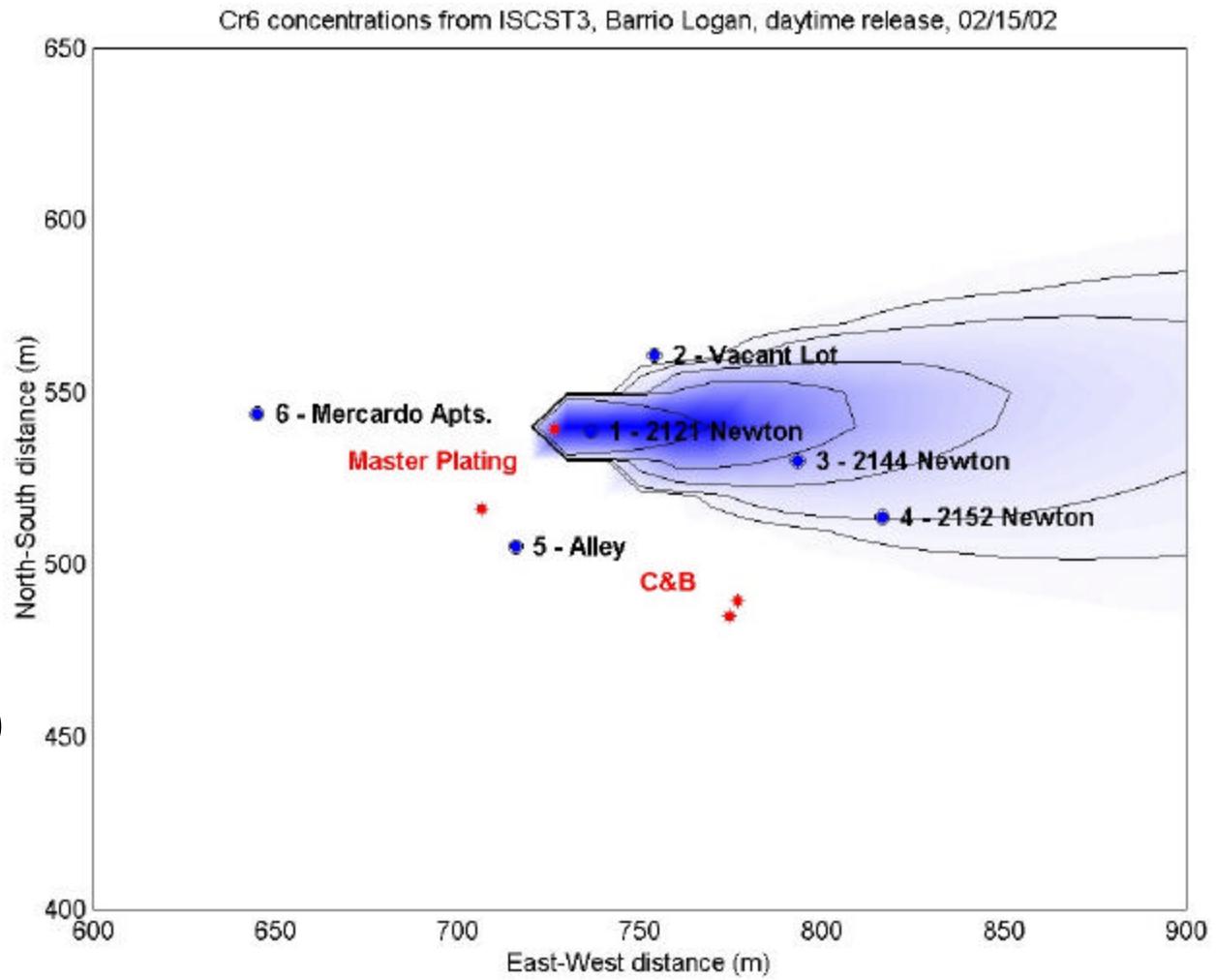
# Near Source Modeling at Barrio Logan

Modeled 24-hr average Cr<sup>+6</sup> concentrations from a chrome plating facility modeled as a volume source



# Near Source Modeling at Barrio Logan

Modeled 24-hr average Cr<sup>+6</sup> concentrations from a chrome plating facility modeled as a volume source (daytime release)

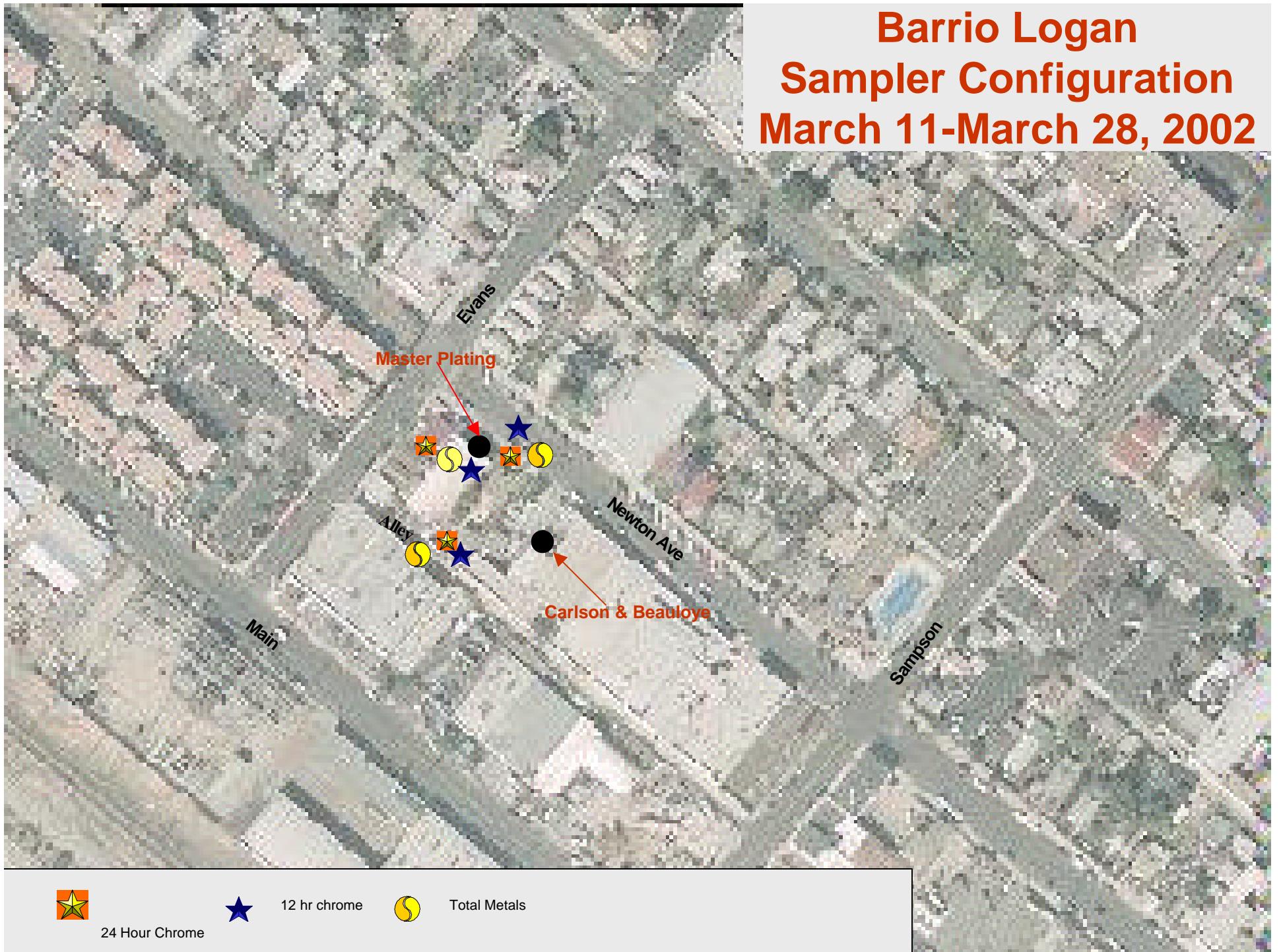


# Monitoring Configuration III

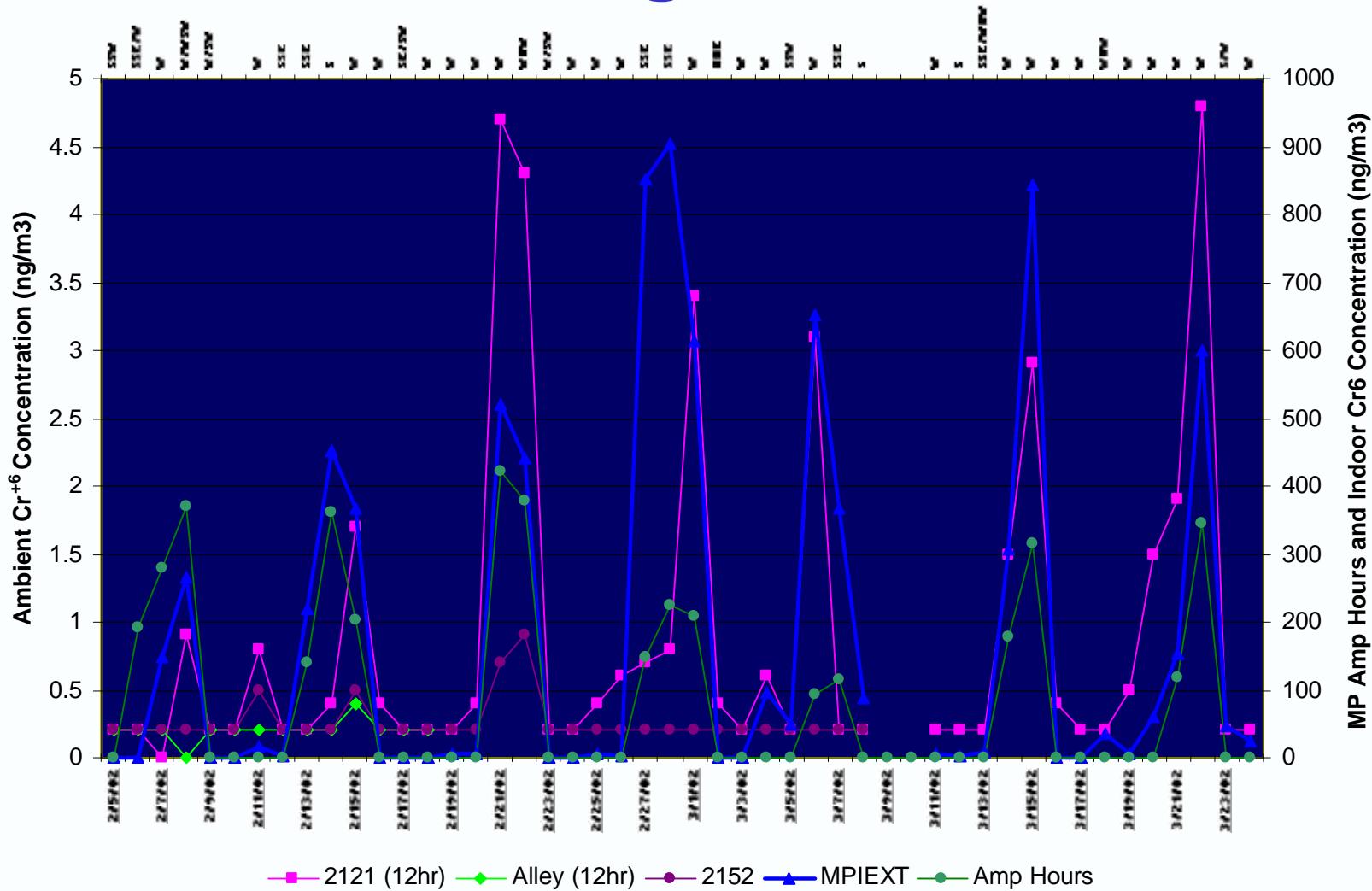
## March 11-March 28

- † Exposure
  - Monitoring continues only at 2121 Newton and Alley
- † Diagnostic
  - After March 25 metal samples are 12 hr
  - Weekend Monitoring conducted inside MP to investigate Sunday night/Monday morning effect ( $\text{Cr}^{+6}$  and metals)
  - Temporary Restraining Order (TRO) to stop chrome plating at MP effective on March 25

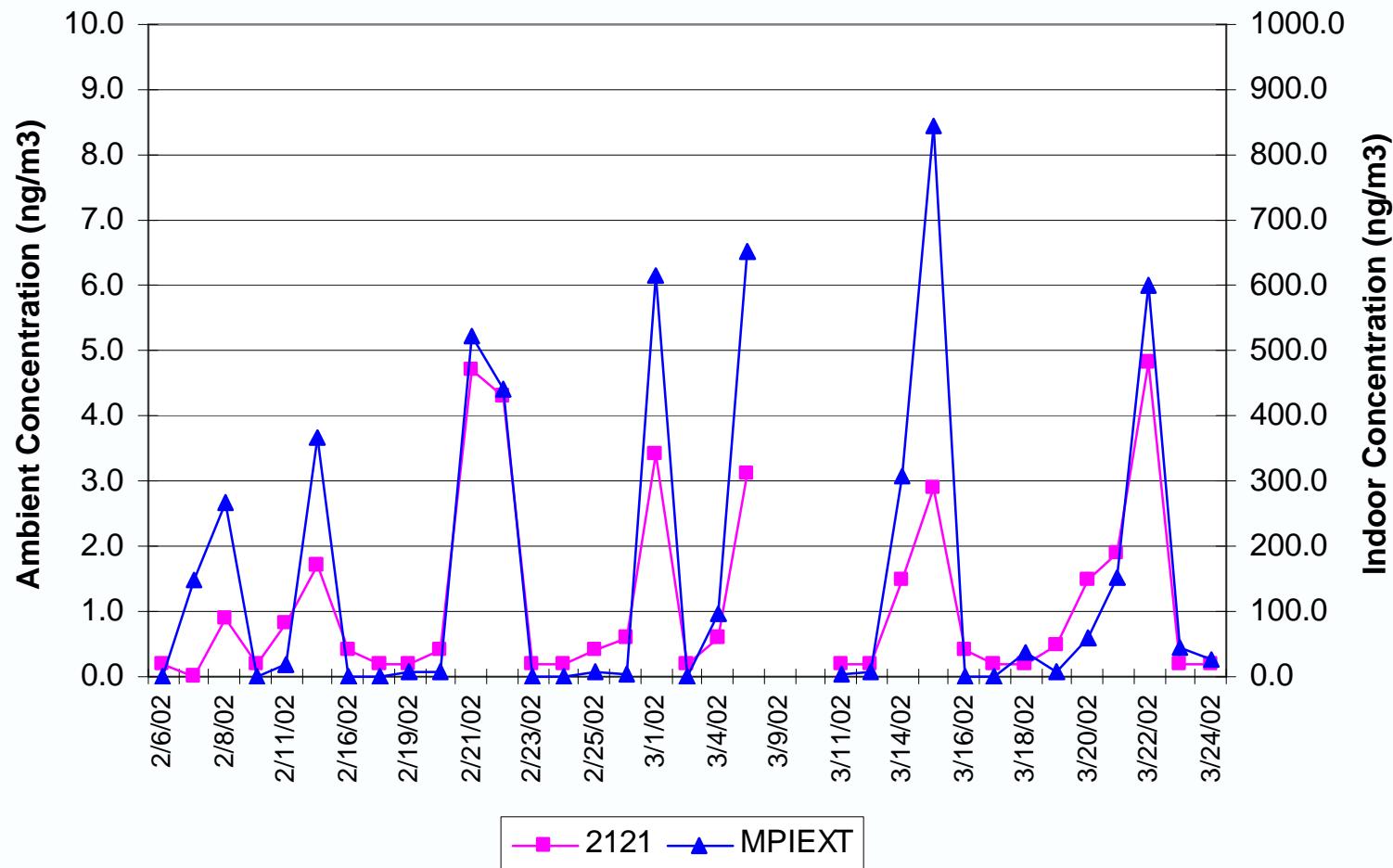
# Barrio Logan Sampler Configuration March 11-March 28, 2002



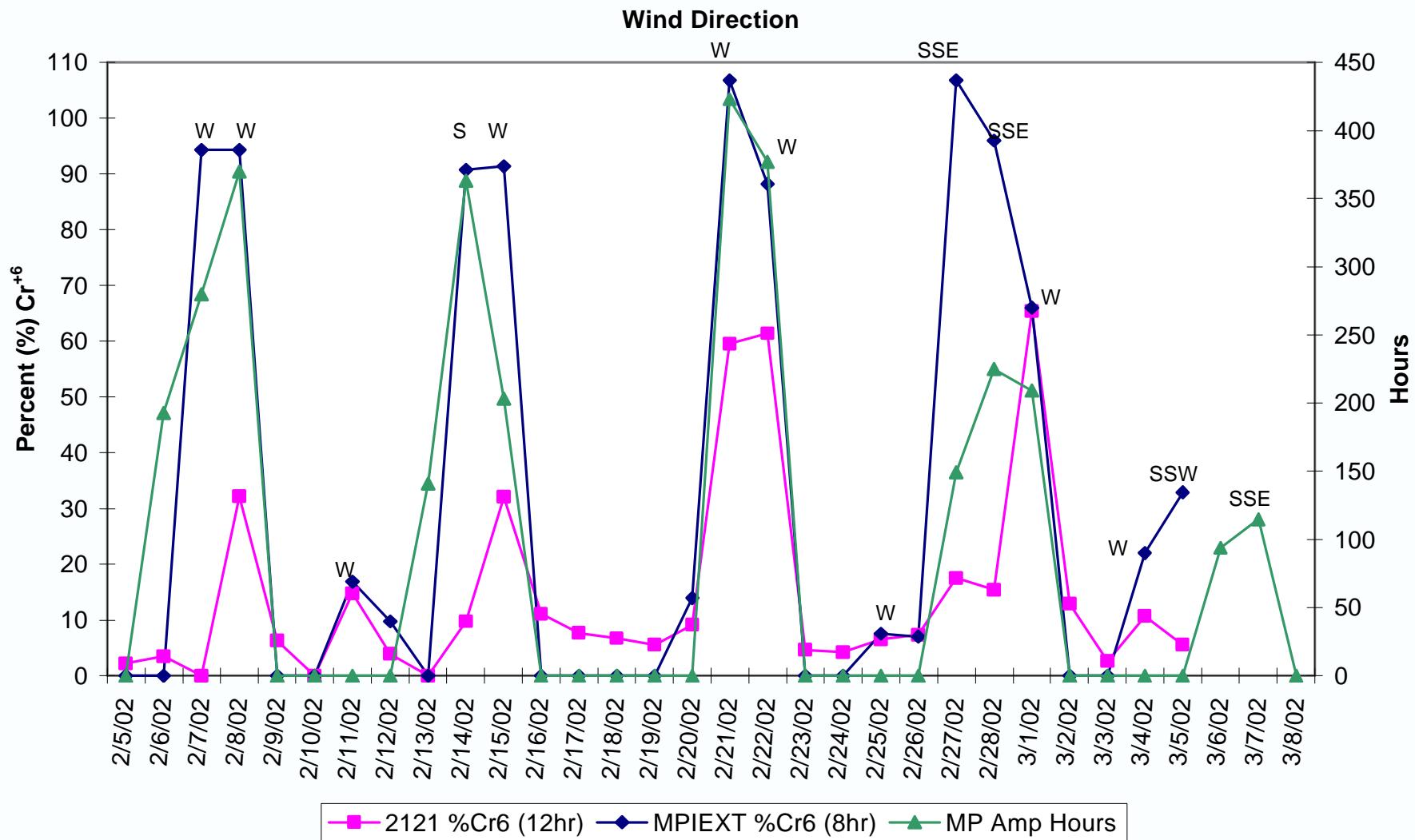
# 12 Hr Cr<sup>+6</sup> Conc. Vs Amp Hours at Master Plating thru March 24



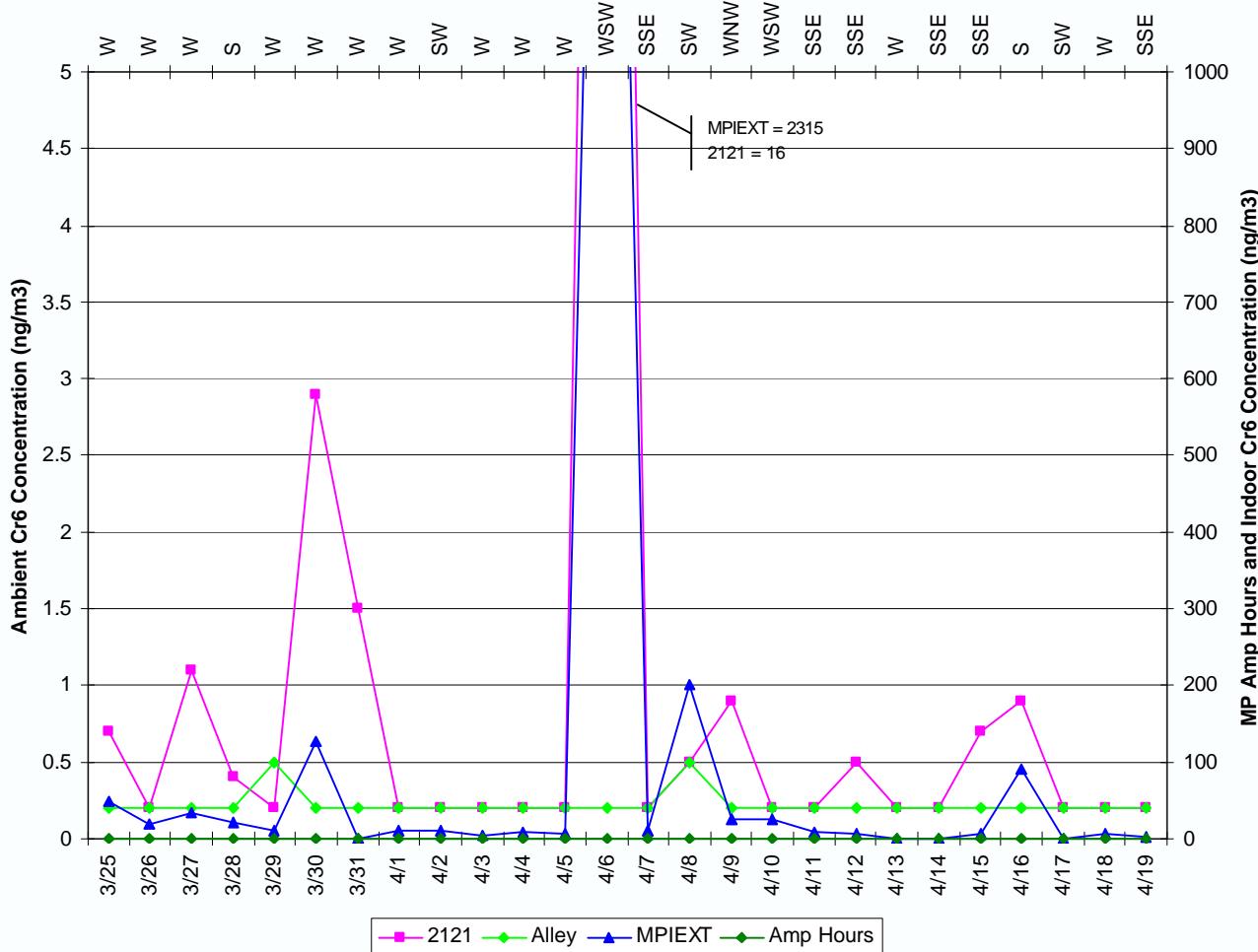
# Hexavalent Chrome Concentrations on West Wind Days thru March 24



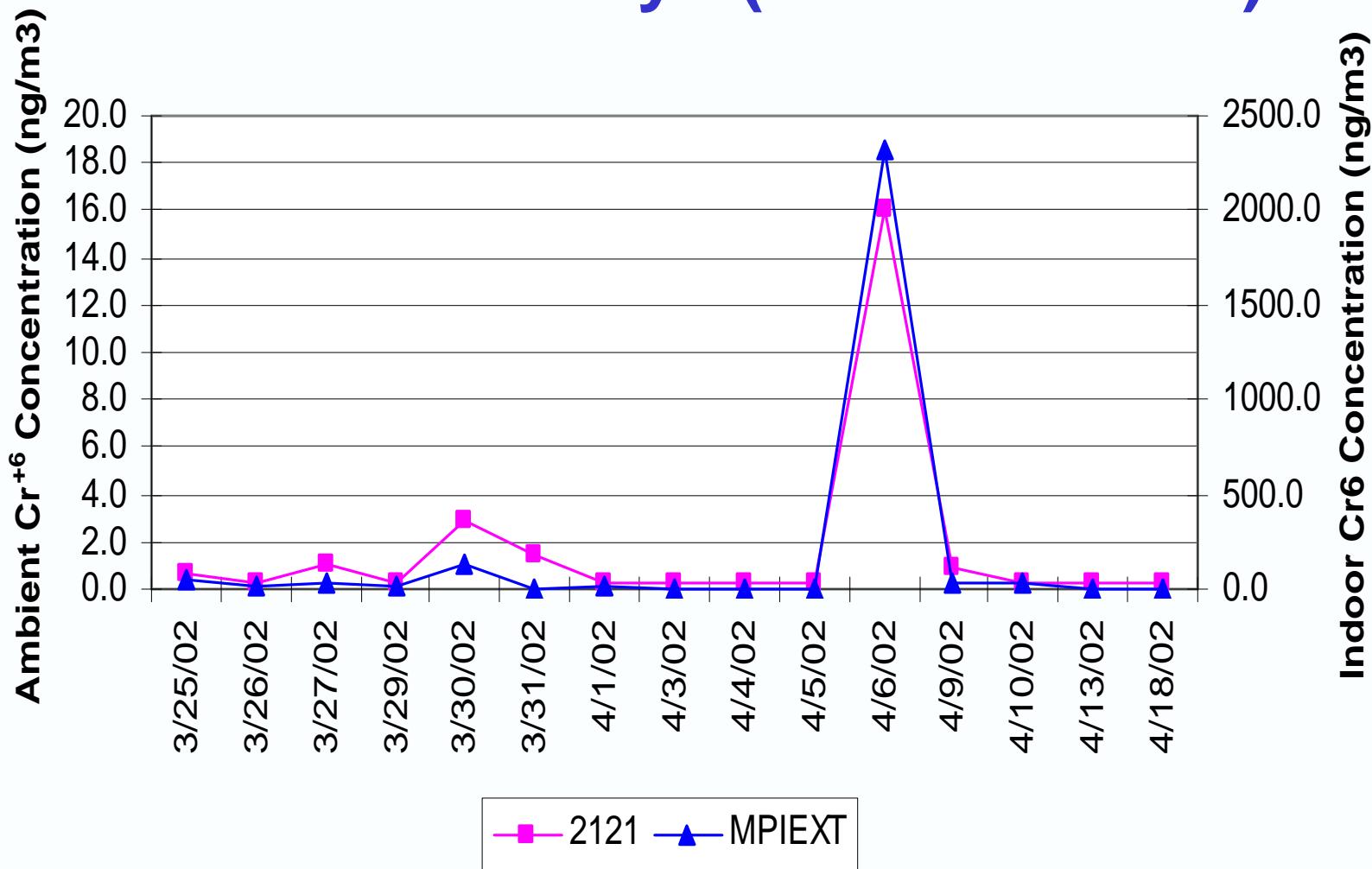
# Ratios of Hexavalent Chrome to Total Chrome



# Hexavalent Chrome Concentrations (after TRO)



# Hexavalent Chrome Concentrations on West Wind Days (After MP TRO)



# Monitoring Configuration IV, V

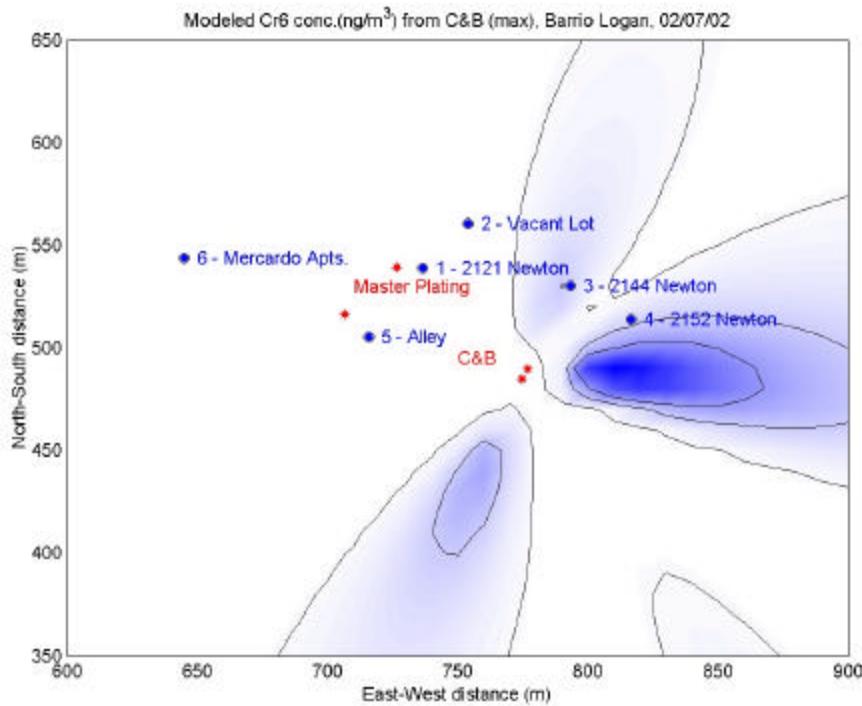
## March 29 - May 24

- † Exposure
  - Continued 24 hr Cr<sup>+6</sup> sampling 2121 Newton and Alley
- † Diagnostic
  - March 29-April 19
    - Added 2168 Newton(12 hour Cr<sup>+6</sup>)
    - Added 2196 Newton(12 hour Cr<sup>+6</sup>)
    - Eliminated 12 hr Cr<sup>+6</sup> and metals sampling at 2121, Alley and inside MP (4-20)
  - April 20 - May 24
    - Added 2191 Main and 2141 Main-12 hr Cr<sup>+6</sup> (9pm-9am)

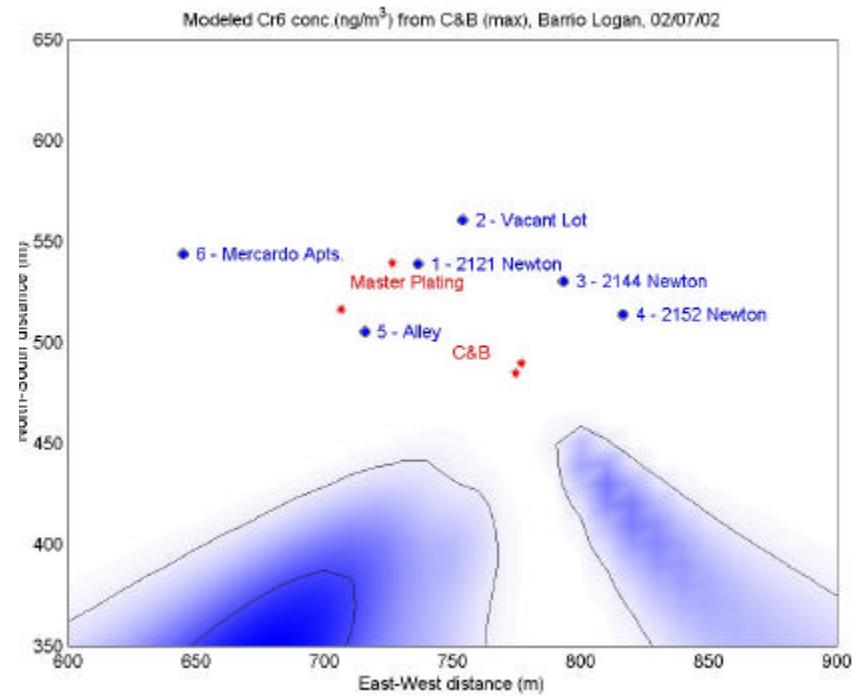
# Near Source Modeling at Barrio Logan

Modeled 24-hr average Cr<sup>+6</sup> concentrations  
from a stack of a chrome plating facility

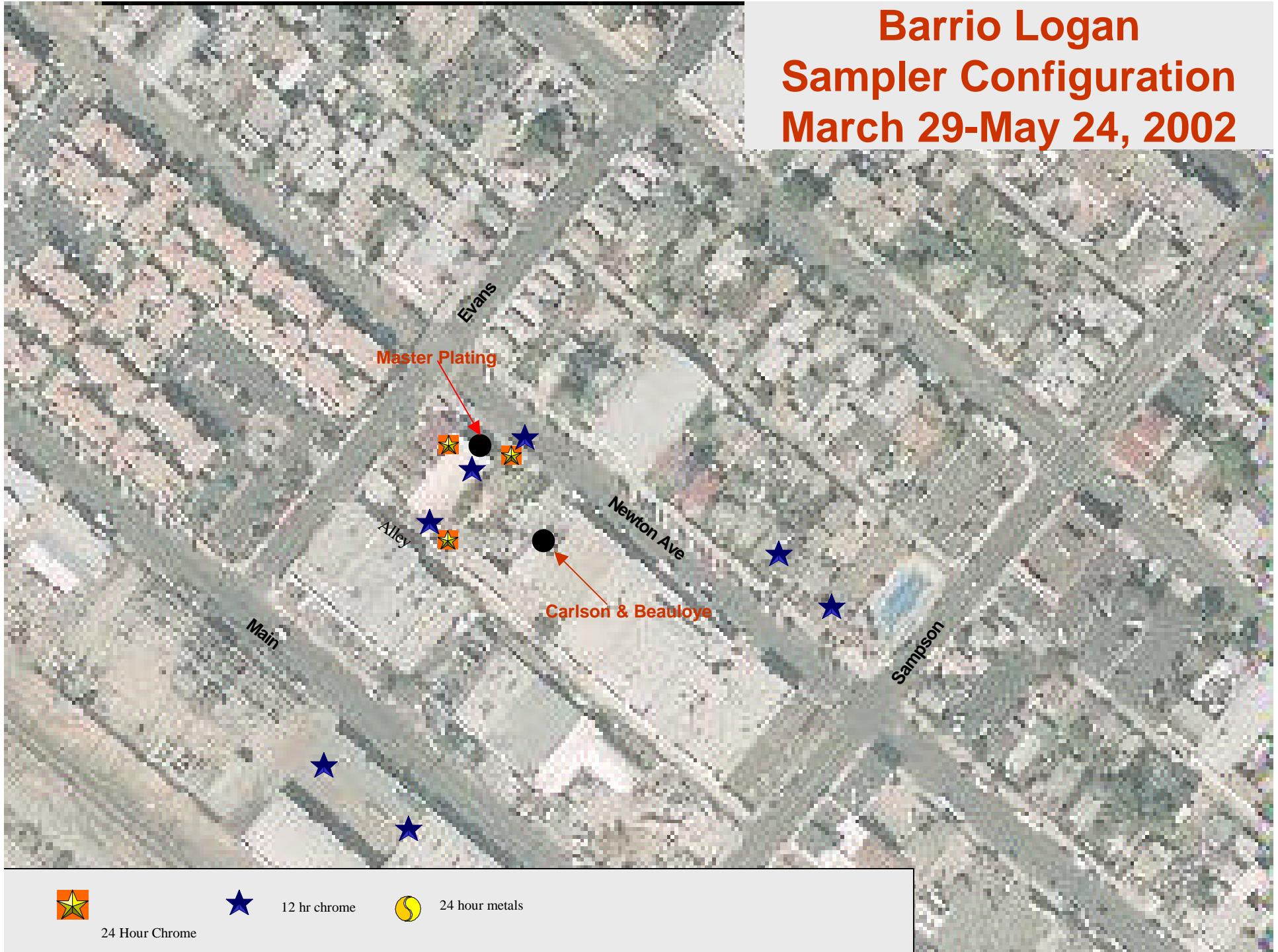
day-time release



night-time release



# Barrio Logan Sampler Configuration March 29-May 24, 2002



# Findings

- † Exposure vs. diagnostic sampling
- † Frequent sampling may be needed to answer questions
- † Evolving network to respond to information as we found it
- † Use of all tools - monitoring, modeling
- † Statewide implications